

IN THE CLAIMS:

1. (Currently amended) A fuel injection valve having an injection hole opened and shut by a valve element which moves in a direction of axis line, by which turn power around center axis line of said injection hole is given to fuel injected from the injection hole by a fuel turn means,

wherein the center axis line of said injection hole is inclined with respect to the center axis line of said valve element by the fixed deflection angle, and

wherein the step difference is formed on ~~the~~ a pointed end of said injection hole.

2. (Original) A fuel injection valve according to claim 1, wherein the step difference on the pointed end of said injection hole is mutually parallel to the plane with the arbitrary tilt angle with respect to the center axis line of said injection hole.

3. (Currently amended) A fuel injection valve according to claim 1 ~~or~~ 2, wherein the pointed end of said injection hole is one of a cutting work side ~~or~~ and a press working side.

4. (Currently amended) A cylinder injection internal combustion engine provided with a fuel injection valve according to ~~any one of claims~~ claim 1 ~~to 3~~.

5. (Currently amended) A method of manufacturing a fuel injection valve having an injection hole opened and shut by a valve element which moves in a direction of axis line, by which turn power around center axis line of said injection hole is given to fuel injected from the injection hole by a fuel turn means, the center axis line of said injection hole inclining with respect to the center axis line of said valve element by the fixed deflection angle, and the step difference being formed on the pointed end of said injection hole,

wherein the first product is made by setting the length of the axis of said injection hole to the length of the axis which has the adjustment margin, and

wherein the second products are made by processing ~~the~~ a pointed end of said injection hole of said the first product, and adjusting the length of the axis of said injection hole, the step difference form of the pointed end of said injection hole and the direction of the step difference to the deflection direction of said injection hole.

6. (Currently amended) A method of manufacturing the fuel injection valve according to claim 5, wherein the processing on the pointed end of said injection hole is carried out by ~~the~~ one of cutting work ~~or~~ and press working.

7. (New) An electronic fuel injection valve comprising:

an orifice plate having an orifice which forms part of a fuel passage whose downstream side end is a fuel injection hole, and a valve seat provided upstream of the orifice;

a movable valve which opens and closes the fuel passage by the engagement with and disengagement from said valve seat, respectively;

a driving means having a coil, to drive said movable valve; and

a fuel turn member which provides turn power to the fuel which flows in said orifice; wherein

the axis line of said orifice is in non-parallel with the axis center of the electromagnetic fuel injection valve, and the position where a penetration length of fuel spray is the longest is controllable by adjusting diameter and length of said fuel injection hole.

8. (New) An electromagnetic fuel injection valve according to claim 7, wherein

said fuel injection hole is non-parallel with an axis center of the electromagnetic fuel injection valve,

an exit face of said fuel injection hole is formed perpendicular to an axis center of said fuel injection hole, and

the position where the penetration length of fuel spray is the longest is freely controllable by adjusting length of said fuel injection hole along the axis center of said fuel injection hole.

9. (New) An electromagnetic fuel injection valve according to claim 7, wherein

said fuel injection hole is non-parallel with the axis center of the electromagnetic fuel injection valve, and

with an exit face of said fuel injection hole formed perpendicular to the axis center of said fuel injection hole, a position where penetration length of fuel spray is the longest, which is decided according to the hole diameter and the member which provide the turn to the fuel is freely controllable by adjusting a position of the exit face formed perpendicular to the axis center of said fuel injection hole.

10. (New) An electromagnetic fuel injection valve comprising:

an orifice plate having an orifice which forms part of a fuel passage whose downstream side end is a fuel injection hold, and a valve seat provided upstream of the orifice;

a movable valve which opens and closes the fuel passage by engagement with and disengagement from said valve seat, respectively;

a driving means having a coil, to drive said movable valve; and

a fuel turn member which provides turn power to the fuel which flows in said orifice; wherein

the axis line of said orifice is in non-parallel with the axis center of the electromagnetic fuel injection valve, and, with the flow passage of said orifice changed by cutting a surface of said orifice on the side of said fuel injection hole, at least one of a position where the fuel spray is concentrated and a position where the penetration length of fuel spray is shifted compared with a position before flow passage length is changed when fuel is injected under atmospheric pressure.

11. (New) An electromagnetic fuel injection valve according to claim 10, wherein an exit face of said fuel injection hole is formed approximately perpendicular to an axis center of said fuel injection hole.

12. (New) An electromagnetic fuel injection valve according to claim 10, wherein when an exit face of said fuel injection hole is formed perpendicular to an axis center of said fuel injection hole, a position where the penetration length of fuel spray is longest, which is decided according to hole diameter and the member which provides the turn to the fuel is freely controllable by adjusting a position of the exit face formed perpendicular to the axis center of said fuel injection hole.